

Application No.: 10/064,683

This listing of claims will replace all prior versions and listings of claims in this application:

a.) Listing of Claims

1. (Currently amended) A wire comprising a sheath encapsulating a core having a core composition, the core composition comprising a combination of graphite and a compound of potassium, ^{A wherein the compound of potassium is K_2MnTiO_4 ,} the combination of graphite and the compound of potassium in the core composition not exceeding approximately 5% by weight, the wire capable of being used in an alternating current gas-metal arc welding process ~~without destabilizing a welding arc.~~
2. (Original) The wire of Claim 1, wherein the compound of potassium is K_2MnTiO_4 .
3. (Original) The wire of Claim 1, wherein the combination of graphite and the compound of potassium in the core composition is selected from the range of about 0.3% to about 5% by weight.
4. (Original) The wire of Claim 1, wherein the diameter of the wire does not exceed $3/32$ ".
5. (Previously Amended) The wire of Claim 4, wherein the alternating current does not exceed 1000A and the amplitude of an electron negative cycle reaches about 850-900 A.
6. (Original) The wire of Claim 1, wherein the diameter of the wire is about $5/32$ ".
7. (Previously Amended) The wire of Claim 6, wherein the alternating current does not exceed 1750A and the frequency is between 160Hz and 180 Hz.

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8. (Original) The wire of Claim 1, wherein the wire composition comprises

C	Mn	Si	Ni	P	S
0.06-0.07	1.1-1.28	0.5-0.65	1.0	0.011	0.011
0.06-0.07	1.1-1.35	0.5-0.70	1.0	0.011	0.010

9. (Original) The wire of Claim 8 having the tensile strength which does not exceed 90,000 psi.

10. (Original) The wire of Claim 1, wherein the core composition further comprises a percentage of Ni selected from the range from about 0%wt to about 4 %wt..

11. (Currently Amended) An alternating current gas-metal arc welding apparatus comprising:

a gas-metal arc welding gun having means for feeding an electrode into the gas-metal arc welding gun;

the electrode comprising a sheath encapsulating a core having a core composition, the core composition comprising a combination of graphite and a compound of potassium, the combination of graphite and the compound of potassium in the core composition not exceeding approximately 5% by weight; and

a power source for supplying alternating electrical current to the electrode.

12. (Currently Amended) The alternating current gas-metal arc welding apparatus of Claim 11, further comprising a gas source supplying a shielding gas to the welding apparatus.

13. (Currently Amended) The alternating current gas-metal arc welding apparatus of Claim 11, wherein the welding process is gas metal arc welding.

14. (Currently Amended). The alternating current gas-metal arc welding apparatus of Claim 11, wherein the means for feeding the electrode into the welding gun comprise a wire drive and a wire reel.

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15. (Currently Amended) The alternating current gas-metal arc welding apparatus of Claim 11, wherein the compound of potassium is K_2MnTiO_4 .

16. (Currently Amended) The alternating current gas-metal arc welding apparatus of Claim 15, wherein the combination is selected from the range from about 0.3% to about 5.0% by weight.

17. (Currently Amended) The alternating current gas-metal arc welding apparatus of Claim 12, wherein the shielding gas comprises a mixture of Ar and CO_2 .

18. (Currently Amended) The alternating current gas-metal arc welding apparatus of Claim 11, wherein the alternating current does not exceed 1000A at and the amplitude of an electron negative cycle reaches about 850-900 A.

19. (Currently Amended) The alternating current gas-metal arc welding apparatus of Claim 11, wherein the diameter of the wire does not exceed about 5/32".

20. (Currently Amended) A alternating current gas-metal arc welding process comprising:

providing an alternating current gas-metal arc welding apparatus having means for feeding an electrode into the gas-metal arc welding apparatus and means for supplying a shielding gas into the gas-metal arc welding apparatus;

coupling the alternating current gas-metal arc welding apparatus to an alternating current power source and forming an arc;

feeding the electrode into the alternating current gas-metal arc welding apparatus, the electrode comprising a sheath and a core having a core composition, the core composition comprising a combination of graphite and a compound of potassium, the combination of graphite and the compound of potassium in the core composition not exceeding approximately 5% by weight; and

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supplying the shielding gas into the alternating current gas-metal arc welding apparatus to shield the electrode and the arc.

21. (Currently Amended) The welding process of Claim 20, wherein supplying the shielding gas into the alternating current gas-metal arc welding apparatus comprises providing an external gas source.
22. (Currently Amended) The welding process of Claim 20, wherein feeding the electrode into the alternating current gas-metal arc welding apparatus comprises providing means for feeding the electrode that is external to the welding apparatus.
23. (Original) The welding process of Claim 20, wherein supplying the shielding gas comprises providing a mixture of Ar and CO₂.
24. (Original) The welding process of Claim 20, wherein the welding process is a gas metal arc welding process.
25. (Original) The welding process of Claim 20, wherein the compound of potassium is K₂MnTiO₄.
26. (Previously Amended) The welding process of Claim 25, wherein the combination is selected from the range from about 0.3% to about 5.0% by weight.
27. (Original) The welding process of Claim 20, wherein the alternating current does not exceed 1000A and wherein the amplitude of an electrode negative part of the cycle reaches about 850-900A.
28. (Original) The welding process of Claim 20, wherein the electrode comprises a percentage of Ni selected from the range of about 0%wt to about 4%wt.

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29. (Original) The welding process of Claim 20, wherein the electrode comprises up to 1%wt of Ni and exhibits a tensile strength of up to 90,000 psi.

30. (Original) The welding process of Claim 20, wherein the diameter of the electrode does not exceed $3/32$ ".

31. (Original) The welding process of Claim 20, wherein the diameter of the wire does not exceed $5/32$ ".